Claim Rejections - 35 USC § 112

1. Claims 5, 6, 10, and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, **claim 5** recites the broad recitation "is less than about 70 mm", and the claim also recites "and preferably less than about 55mm.", which is the narrower statement of the range/limitation. **Claim 6** recites the broad recitation "is less than about 65mm", and the claim also recites "more preferably in the range of about 20 mm to 50 mm.", which is the narrower statement of the range/limitation. **Claim 10** recites the broad recitation "preferably less than about 120 degrees", and the claim also recites "more preferably less than about 60

degrees, and even more preferably less than about 30 degrees.", which is the narrower statement of the range/limitation. **Claim 15** also recites the broad recitation "is less than about 15 N/mm", and the claim also recites "preferably in the range of about 0.1 to about 10 N/mm, and more preferably in the range of about 0.5 to 5 N/mm.", which is the narrower statement of the range/limitation.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-4, 9, 11-14, 16, 33-36 are rejected under 35 U.S.C. 102(e) as being anticipated by Chen (US 2005/0156916).

Regarding claim 1, *Chen* discloses a device (100) for manual input of control signals in a computer-related environment (See Figures 1-4 of *Chen*), the device comprising:

a base (10) for supporting the device on a surface (Figure 4 of *Chen* discloses having a base support the input device.);

a first input member (20) mounted on the base (10) for rotary movement about an axis (21) extending generally upwardly from the base (10), the first input member

(20) having an axial extent (22) from an end region (23) proximal the base (10) to an end region (23) distal from the base and enclosing a central space (26) within which a sensor arrangement (50) is housed for detecting and interpreting rotary movement of the first input member (20) relative to the base, the first input member (20) having an opening at each of its proximal and distal end regions (23, 24) (Figures 2-4 of *Chen* disclose having a first input member 20 for inputting rotary movements about a vertical axis extending away from the base of the device, where first input member 20 has a central space which includes sensing switches 102 which detect and interpret rotary movement of the first input member 20.);

and at least two second input members (31, 32) provided at or adjacent said distal end region (24) of the first input member, each of said second input members (31, 32) comprising a switch or relay adapted to be actuated by application of finger pressure (Figures 2-4 of *Chen* disclose having contact switches 401 which are located on the top of the first input member 20 and are finger actuated.);

wherein rotary movement of the first input member (20) and/or actuation of the second input members (31, 32) is adapted to generate a corresponding control signal within the computer environment and wherein the at least two second input members (31, 32) are mounted such that rotary movement of the first input member (20) relative to the base does not influence or alter a position of the two second input members (31, 32) (Figures 2-4 and Paragraphs [0029] - [0030] of *Chen* disclose that rotary movement of the first input member 20 and actuation of the plurality of second input members 401

operate to generate a control signal and that movement of rotary member 20 doesn't affect the position of the second input members 401.).

Regarding claim 2, *Chen* discloses a device according to claim 1, wherein the first input member (20) comprises a generally cylindrical sleeve- or ring-like element having a substantially hollow or open central region (26) which extends between the said proximal and distal end regions (23, 24) (Figures 2-4 of *Chen* disclose that input member 20 is cylindrical in shape and has a hollow central region which extends between both ends of the input member 20.).

Regarding claim 3, *Chen* discloses a device according to claim 1, wherein the first input member (20) has a generally circular cross-section transverse to its rotational axis (21) (Figures 2-4 of *Chen* disclose that the input member 20 has a circular cross-section when viewed from a plane perpendicular to the rotational axis of the input member, i.e. from a top-down view.).

Regarding claim 4, *Chen* discloses a device according to claim 1, wherein the movement or actuation of each input member (20, 31, 32) can be performed independently without affecting the other input member(s) (Figures 2-4 of *Chen* discloses that the first input member 20 and the second input members 401 can be actuated independently without affecting each other.).

Regarding claim 9, *Chen* discloses a device according to claim 1, wherein the axis of rotation (21) of the first input member (20) extends substantially perpendicular to the base (10) (Figures 2-4 of *Chen* disclose that the axis of rotation of input member 20 is perpendicular to the base of the input device.).

Regarding claim 11, *Chen* discloses a device according to claim 1, wherein the first input member (20) has a rotational home position, and the user interface device is adapted to generate a control signal when the first input member (20) is rotated about its axis away from said home position (Figure 3 and Paragraphs [0028] – [0029] of *Chen* disclose that the input member 20 has a home position and sensing switches 102 emit a control signal when the input member 20 is moved from the home position.).

Regarding claim 12, *Chen* discloses a device according to claim 11, wherein the first input member (20) is resiliently biased to return to said home position (Figure 2 and Paragraph [0028] of *Chen* disclose that the input member 20 is returned to a home position by using a spring 30.)

Regarding claim 13, *Chen* discloses a device according to claim 1, wherein the first input member (20) is adapted for rotary movement in either or both of the clockwise and counter-clockwise directions about the rotational axis (21) (Figures 2-3 and Paragraphs [0028] - [0029] of *Chen* discloses that the input member 20 is operable to be rotated in the clockwise and counter-clockwise directions.).

Regarding claim 14, *Chen* discloses a device according to claim 1, wherein the first input member (20) is adapted for "finger-tip control", such that the rotary movement of the first input member relative to the base requires a force commensurate with what can be easily applied by an average user's fingers (Figures 2-4 and Paragraphs [0028] – [0029] of *Chen* disclose that the rotary knob 20 is rotated by the user to make inputs to the device. It is inherent that the rotary knob 20 would be actuated by the user's

finger tips and that the rotary movement would require a force that is equivalent to a force that can be applied by the average user's fingers.).

Regarding claim 16, *Chen* discloses a device according to claim 1, wherein the second input members (31, 32) are configured as push-button switches or relays, and the user interface device is adapted to generate a control signal when each said second input member is manually activated via the application of finger pressure (Figures 2-5 and Paragraph [0030] of *Chen* discloses that second input members 401 are contact switches for inputting directional signals, and are finger-actuated by the user.).

Regarding claim 33, *Chen* discloses a device according to claim 1, wherein the sensor arrangement (50) is designed to detect and interpret rotary movement of the first input member and/or axial displacement of the first input member and/or pivoting or translational movement of the frame portion (Figures 2-5 of *Chen* disclose having a sensor arrangement where rotary movement of a first input member 20 is detected.).

Regarding claim 34, *Chen* discloses a device according to claim 1, wherein the sensor arrangement (50) is mounted on or within the frame (51) (Figures 2-5 of *Chen* disclose a ring body 10 upon which the sensor arrangement is mounted.).

Regarding claim 35, *Chen* discloses a device according to claim 1, wherein the base (10) is adapted to support the device on an operating surface, such as a table or desktop (Figure 4 of Chen discloses having a body for supporting the device on an operating surface.).

Regarding claim 36, *Chen* discloses a device according to claim 1, wherein the device (100) is designed for one-handed operation by a user (Figures 2-4 of *Chen* discloses that an input device can be operated with one-hand by the user.).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (US 2005/0156916) in view of Sato et al (US 2003/0019734).

Regarding claim 5, *Chen* discloses a device according to claim 1.

Chen fails to teach wherein the diameter of the first input member (20) is less than about 70 mm, and preferably less than about 55 mm.

Sato et al discloses wherein the diameter of the first input member (20) is less than about 70 mm, and preferably less than about 55 mm (Paragraph [0051] of *Sato et al* discloses having the diameter of the operation knob 10a of a rotary input device equal to 10 mm, which is less than 55 mm.).

Therefore it would have been obvious to one of ordinary skill in the art to modify the input device taught by *Chen* with the teachings of *Sato et al* in order to form an input device in which can be easily actuated by the user of the device.

Regarding claim 6, *Chen* as modified above discloses a device according to claim 1, wherein the axial extent (22) of the first input member (20) is less than about 65 mm, and more preferably in the range of about 20 mm to 50 mm (Paragraph [0051] of *Sato et al* discloses having the height of the operation knob 10a of a rotary input device equal to 20 mm, which is in the size range listed above.).

6. Claims 7-8, 29-32, 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (US 2005/0156916) in view of Yuasa et al (US 7,436,398).

Regarding claim 7, *Chen* discloses a device according to claim 1.

Chen fails to teach wherein the first input member (20) is mounted for rotation about a frame (51) which extends from the base generally centrally of the first input member (20), and wherein the second input members (31, 32) are provided at an upper end region (30) of the frame (51).

Yuasa et al discloses wherein the first input member (20) is mounted for rotation about a frame (51) which extends from the base generally centrally of the first input member (20), and wherein the second input members (31, 32) are provided at an upper end region (30) of the frame (51) (Figures 3 and 5 of *Yuasa et al* disclose having a rotary input member 21 which surrounds an input frame which is connected to a second input member 22, which is provided at a upper end region of the input frame.).

Therefore it would have been obvious to one of ordinary skill in the art to modify the input device taught by *Chen* with the teachings of *Yuasa et al* in order to form an

input device in which unintended operations of the input device by the user are prevented.

Regarding claim 8, *Chen* as modified above discloses a device according to claim 7, wherein the upper end region (30) of the frame (51) projects beyond the distal end region (24) of the first input member (20) (Figures 3 and 5 of *Yuasa et al* disclose having a second input unit 22 which is connected to the input frame, where said second input unit 22 extends above the upper end region of the first input member 21.).

Regarding claim 29, *Chen* as modified above discloses a device according to claim 1, wherein at least a portion of the frame (51) around which the first input member is mounted is movable to generate an input control signal (Figure 5 of *Yuasa et al* discloses that the frame around which the input member 21 is mounted is moveable to generate input control signals.).

Regarding claim 30, *Chen* as modified above discloses a device according to claim 29, wherein the frame portion (51) is pivotable, translatable, or both pivotable and translatable relative to the base (10) of the device to generate a control signal (Figures 3 and 5 of *Yuasa et al* discloses that input member 22 is translatable with respect to the base of the input device.).

Regarding claim 31, *Chen* as modified above discloses a device according to claim 30, wherein the frame portion (51) has a resilient bias against said pivotable and/or translational movement, which bias acts to return the frame portion to a neutral position (Column 5, lines 44-51 of *Yuasa et al* discloses that input member 22 is connected to a return mechanism for returning input member 22 to a home position.).

Regarding claim 37, *Chen* as modified above discloses a system for image generation and/or manipulation in a computer environment, wherein the system includes a user interface device (100) according to claim 1 (Figures 7-10 of *Yuasa et al* disclose using an input device to manipulate images being displayed by a computer system and to also choose images to be displayed. The Examiner is to give each claim its broadest reasonable interpretation without reading limitations from the specification into the claims. Therefore the Examiner takes image generation and/or manipulation to mean choosing a menu to bring it up on the display or switching between displayed menus. It is also well known in the art to use a user interface device to issue controls a particular software program being ran on a computer system.).

7. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (US 2005/0156916) in view of McVicar (US 6,296,571).

Regarding claim 10, *Chen* discloses a device according to claim 1.

Chen fails to teach wherein the rotary movement of the first input member is within a limited angular range, said angular range being preferably less than about 120°, more preferably less than about 60°, and even more preferably less than about 30°.

McVicar wherein the rotary movement of the first input member is within a limited angular range, said angular range being preferably less than about 120°, more preferably less than about 60°, and even more preferably less than about 30° (Column 1, lines 27-49 of *McVicar* disclose limiting the angular movement of an angular input device to 90 degrees in each of the clockwise and counter-clockwise directions.).

Therefore it would have been obvious to one of ordinary skill in the art to modify the input device taught by *Chen* with the teachings of *McVicar* in order to form an input device in which the life expectancy of the biasing spring used in the rotary input device can be extended by limiting the angular movement of the rotary input device.

8. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (US 2005/0156916) in view of Massie et al (US 2003/0034994).

Regarding claim 15, *Chen* discloses a device according to claim 13.

Chen fails to teach wherein the resilient bias of the first input member (20) is less than about 15 N/mm, preferably in the range of about 0.1 to about 10 N/mm, and more preferably in the range of about 0.5 to about 5 N/mm.

Massie et al discloses wherein the resilient bias of the first input member (20) is less than about 15 N/mm, preferably in the range of about 0.1 to about 10 N/mm, and more preferably in the range of about 0.5 to about 5 N/mm (Paragraphs [0092] and [0135] of *Massie et al* disclose having an actuator supplying a force of at least 1.6 N/mm to 3.2 N/mm to generate haptic feedback to the user of the input device. Therefore the spring constant of the 30 of *Chen* would be 1.6 N/mm to give the user an appropriate amount of tactile feedback when operating the input knob 20.).

Therefore it would have been obvious to one of ordinary skill in the art to modify the input device taught by *Chen* with the teachings of *Massie et al* in order to form an input device in which the input knob gives an appropriate amount of tactile feedback to the user of the input device.

9. Claims 17-18, 20-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (US 2005/0156916) in view of Evans et al (US 7,116,310).

Regarding claim 17, *Chen* discloses a device according to claim 1.

Chen fails to teach wherein the control signal generated upon movement or actuation of at least one of said first or second input members (20, 31, 32, 33, 34) is programmable.

Evans et al discloses wherein the control signal generated upon movement or actuation of at least one of said first or second input members (20, 31, 32, 33, 34) is programmable (Figures 5-6 and Column 8, lines 63-67 and Column 9, lines 1-39 of *Evans et al* disclose having the user map which control signals are generated upon actuation of the input members.).

Therefore it would have been obvious to one of ordinary skill in the art to modify the input device taught by *Chen* with the teachings of *Evans et al* in order to form an input device in which the control signals generated by said input device are determined based on the type of software being ran on the computer system and user preferences.

Regarding claim 18, *Chen* as modified above discloses a device according to claim 17, including operating software designed to enable the respective control signal associated with actuation of a particular input member (20, 31, 32, 33, 34) to be altered or set to one of a number of possible alternatives (Column 2, lines 24-67 and Column 3, lines 1-21 of *Evans et al* disclose having the key mapping of the input members on the

input device being changed based on the software currently being ran on the computer system.).

Regarding claim 20, *Chen* as modified above discloses a device according to claim 18, wherein the operating software is adapted to display details of a respective control signal associated with one or more of said input members (20, 31, 32, 33, 34), and/or said possible alternatives, on a display monitor associated with the computer processing unit with which the device (100) is used (Figures 12 and 14 of *Evans et al* disclose displaying to the user of the input device an user interface showing details of the mapping of the input buttons.).

Regarding claim 21, *Chen* as modified above discloses a device according to claim 1, wherein the two second input members (31, 32) are programmed such that each of said second input members performs an opposite function to the other (Column 2, lines 24-67 and Column 3, lines 1-21 of *Evans et al* disclose having the key mapping of the input members on the input device being changed based on the software currently being ran on the computer system. It is inherent that if you could change the key mapping of the input members, you could also make the input members perform opposite functions with respect to each other. Also the input members 401 disclosed in Figures 2-3 of *Chen* have opposite functions with respect to each other since one button has a right arrow while a second button has a left arrow, which are opposite functions.).

Regarding claim 22, *Chen* as modified above discloses a device according to claim 1, wherein the device (100) includes four second input members (31, 32, 33, 34), preferably able to be programmed (Figure 6 of *Evans et al* discloses that an input

device 67 which has at least 4 second input members which are also user programmable.).

Regarding claim 23, *Chen* as modified above discloses a device according to claim 1, further including one or more third input members (41, 42, 43, 44, 45) provided on the base adjacent the first input member (Figure 6 of *Evans et al* discloses having a plurality of input members disposed on the base of joystick 67.).

Regarding claim 24, *Chen* as modified above discloses a device according to claim 23, wherein each said third input member (41, 42, 43, 44, 45) is in the form of a switch or relay adapted to be manually activated in similar fashion to each said second input member (Figure 6 and Column 11, lines 37-38 of *Evans et al* discloses that the plurality of input members on joystick 67 are buttons, i.e. switches which are to be pressed by the fingers of the user.).

Regarding claim 25, *Chen* as modified above discloses a device according to claim 23, wherein the one or more third input members (41, 42, 43, 44, 45) are not programmable to provide different operational control signals, but rather have pre-set functions (Column 2, lines 24-67 and Column 3, lines 1-21 of *Evans et al* disclose having the key mapping of the input members on the input device being changed based on the software currently being ran on the computer system. It is inherent that if you could change the key mapping of the input members, you could also make the input members to be non-programmable and have a pre-set input function.).

10. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (US 2005/0156916) in view of Steinberg (US 5,379,053).

Regarding claim 19, *Chen* discloses a device according to according to claim 1.

Chen fails to teach said device including operating software designed to enable parameters of the device such as response speed and/or sensitivity of the input members to be adjusted.

Steinberg discloses said device including operating software designed to enable parameters of the device such as response speed and/or sensitivity of the input members to be adjusted (Column 1, lines 57-68 and Column 2, lines 1-2 of *Steinberg* disclose it is well known to have software which can adjust the sensitivity of input members being used in an input device.).

Therefore it would have been obvious to one of ordinary skill in the art to modify the input device taught by *Chen* with the teachings of *Steinberg* in order to form an input device in which the precision of the input device can be adjusted according to the preference of the user.

11. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (US 2005/0156916) in view of Hsu (US 7,071,921).

Regarding claim 26, *Chen* discloses a device according to claim 1.

Chen fails to teach wherein the base (10) is designed for translational movement over a supporting service in such a way that the translational movement generates a control signal within the computer environment.

Hsu discloses wherein the base (10) is designed for translational movement over a supporting service in such a way that the translational movement generates a control signal within the computer environment (Figures 3-4 and 8-9 and Column 3, lines 40-45 of *Hsu* disclose having an input device wherein a mouse which generates an input by being moved across a surface is combined with a joystick-like input device for providing additional input means.).

Therefore it would have been obvious to one of ordinary skill in the art to modify the input device taught by *Chen* with the teachings of *Hsu* in order to form an input device in which the rotary input device can also perform mouse-like inputs, thus further increasing the versatility of the input device.

12. Claims 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (US 2005/0156916) in view of Hayashi (US 6,867,379).

Regarding claim 27, *Chen* discloses a device according to claim 1.

Chen fails to teach wherein, in addition to being rotatable, the first input member (20) is displaceable in an axial direction relative to the base to also generate a control signal in the computer-related environment.

Hayashi discloses wherein, in addition to being rotatable, the first input member (20) is displaceable in an axial direction relative to the base to also generate a control signal in the computer-related environment (Figures 1 and 2 of *Hayashi* disclose a rotary member 21 which is displaceable in the vertical direction to generate a control signal.).

Therefore it would have been obvious to one of ordinary skill in the art to modify the input device taught by *Chen* with the teachings of *Hayashi* in order to form a rotary input device in which the rotary knob can also be used to provide a push button input in addition to a rotary input.

Regarding claim 28, *Chen* as modified above discloses a device according to claim 27, wherein the first input member (20) is displaceable in either or both axial directions, preferably against a resilient bias which acts to return the first input member to an axial home position (Column 8, lines 17-38 of *Hayashi* discloses that a coil spring 38 operates to urge the push knob 20 to return back to a rest position shown in Figure 1.).

13. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (US 2005/0156916) in view of Yuasa et al (US 7,436,398) as applied to claim 29 above, and further in view of Takada et al (US 6,059,660).

Regarding claim 32, *Chen* as modified above discloses a device according to claim 29.

Chen as modified above fails to teach wherein application of lateral pressure to the first input member (20) is adapted to pivot or translate said frame portion relative to the base (10).

Takada et al discloses wherein application of lateral pressure to the first input member (20) is adapted to pivot or translate said frame portion relative to the base (10)

(Figure 6 of *Takada et al* discloses that when applying lateral pressure to an input member 9, the support frame is rotated relative to the base of the input device.).

Therefore it would have been obvious to one of ordinary skill in the art to further modify the input device taught by *Chen* with the teachings of *Takada et al* in order to form an input device in which a input device which can joystick-like movements can also detect rotary inputs.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to STEPHEN A. BRAY whose telephone number is (571)270-7124. The examiner can normally be reached on Monday - Friday, 9:00 a.m. - 5:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, AMR AWAD can be reached on (571)272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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26 March 2010